

Claims

- [c1] 1. An electrode for a solid-state fuel cell comprising a tape having opposite sides joined by a peripheral edge, one of said opposite faces having a plurality of surface depressions therein extending partially through said tape.
- [c2] 2. The electrode of claim 1 wherein said surface depressions comprise an array of round holes.
- [c3] 3. The electrode of claim 1 wherein said tape is substantially square.
- [c4] 4. The electrode of claim 1 wherein said tape is substantially round.
- [c5] 5. The electrode of claim 1 wherein said surface depressions have a depth of about 10–90% of the depth of the tape.
- [c6] 6. The electrode of claim 1 wherein said tape is comprised of a ceramic material.
- [c7] 7. The electrode of claim 1 wherein said tape has a thickness of from about 0.3 to about 2 mm.

- [c8] 8. The electrode of claim 7 wherein said surface depressions have a depth of about 0.23 mm.
- [c9] 9. The electrode of claim 2 wherein said surface depressions have a depth of about 0.23 mm and said tape has a thickness of about 0.33 mm.
- [c10] 10. The electrode of claim 2 wherein said electrode comprises an anode for a solid oxide fuel cell.
- [c11] 11. A method of forming a multi-layer assembly for a solid-state fuel cell comprising:
providing a ceramic tape layer;
laminating said ceramic tape layer onto one side of an electrolyte tape layer to create the multi-layer assembly;
creating a pattern of surface depressions on one side of the ceramic tape layer; and thereafter
firing said multi-layer assembly.
- [c12] 12. The method of claim 11 wherein said surface depressions comprise an array of round holes.
- [c13] 13. The method of claim 11 wherein said ceramic tape layer is substantially square.
- [c14] 14. The method of claim 11 wherein said ceramic tape layer is substantially round.
- [c15] 15. The method of claim 11 wherein said surface de-

pressions have a depth of about 65–70% of the depth of said ceramic tape layer.

[c16] 16. The method of claim 11 wherein said ceramic tape layer has a thickness of from about 0.3 to about 2 mm.

[c17] 17. The method of claim 16 wherein said surface depressions have a depth of about 0.23 mm.

[c18] 18. The method of claim 10 wherein said surface depressions have a depth of about 0.23 mm and said ceramic tape layer has a thickness of about 0.33 mm.

[c19] 19. The method of claim 11 wherein said surface depressions are formed by die punching.

[c20] 20. The method of claim 11 wherein said ceramic tape layer comprises an anode for a solid oxide fuel cell.

[c21] 21. The method of claim 11 and further comprising laminating another ceramic tape layer on an opposite side of said electrolyte tape layer prior to creating said pattern of surface depressions on said one side of said ceramic tape layer.

[c22] 22. A solid oxide fuel cell comprising an anode, a cathode and an electrolyte, said anode and cathode arranged on opposite sides of said electrolyte, at least one of said anode and said cathode having a plurality of surface de-

pressions formed in an exposed side thereof, extending partially through said one of said anode and cathode.

- [c23] 23. The solid oxide fuel cell of claim 22 wherein said plurality of surface depressions are formed in the exposed side of the anode.
- [c24] 24. The solid oxide fuel cell of claim 23 wherein said surface depressions comprise an array of round holes.
- [c25] 25. The solid oxide fuel cell of claim 22 wherein said anode is substantially square.
- [c26] 26. The solid oxide fuel cell of claim 22 wherein said anode is substantially round.
- [c27] 27. The solid oxide fuel cell of claim 22 wherein said surface depressions have a depth of about 10–90% of the depth of the anode.
- [c28] 28. The solid oxide fuel cell of claim 22 wherein said anode has a thickness of from about 0.3 to about 2 mm.
- [c29] 29. The solid oxide fuel cell of claim 22 wherein said surface depressions have a depth of about 0.23 mm.
- [c30] 30. The solid oxide fuel cell of claim 22 wherein said surface depressions have a depth of about 0.23 mm and said anode has a thickness of about 0.33 mm.

[c31] 31. The solid oxide fuel cell of claim 23 wherein said anode is comprised of a ceramic tape laminated onto said electrolyte.